A NEW UPPER CRETACEOUS OPHIUROID FROM AUSTRALIA

by S. K. SKWARKO

ABSTRACT. A new ophiuroid, *Nullamphiura felli* sp. nov., is described from Cenomanian (Upper Cretaceous) strata of Bathurst Island, Northern Territory, Australia. This is the first recorded fossil occurrence of the cosmopolitan living genus *Nullamphiura* Fell 1962.

Only one other ophiuroid, *Ophiacantha* (*Ophioglyphoida*) *fosteri* Chapman 1934, is known to have been described from Australian Cretaceous beds.

DURING systematic investigation of the Mesozoic strata of the Northern Territory the writer visited Bathurst Island, north of Darwin, where rich collections of Cretaceous fossils have been collected in the past. The fossil collections made by the writer consist almost exclusively of Mollusca, but at Mirindow Point, on the southern coast of the island, a wave-cut cliff yielded a single incomplete specimen of an ophiuroid. As far as can be ascertained this is only the second ophiuroid to be found in Australian Cretaceous strata, though Brunnschweiler (1953, p. 48) recorded an 'abundance of small Ophiuroidea in certain beds' of the Upper Jurassic Alexander Formation, Canning Desert, Western Australia.

SYSTEMATIC DESCRIPTION

Class ASTEROZOA (Subdivided after Fell 1960)
Subclass OPHIUROIDEA
Order OPHIURIDA Mueller and Troschel 1840
Suborder OPHIURAE Mueller and Troschel 1840
Family AMPHIURIDAE Ljungman 1867
Genus NULLAMPHIURA Fell 1962

Type species. Amphiura psilopora H. L. Clark 1911.

Nullamphiura felli sp. nov.

Plate 78, figs. 4, 5; text-figs. 1, 2

Material. Single oral impression of an almost complete specimen; several poorly preserved impressions of arms of other specimens. Aboral aspect not available for examination. Specimen embedded in bluish clay of Cenomanian age; collected in a wave-cut cliff at Mirindow Point, southern coast of Bathurst Island, Northern Territory, Australia. Locality number, T.T. 51. Holotype, CPC 4642, fossil registration number, F22163; lodged at the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T.

Diagnosis. Disc scaled; ratio of the size of ventral arm plates to lateral arm plates increases distally along arms. Tentacle pores large, lacking tentacle scales; arm spines robust, tapering, two to each lateral arm plate.

Description. Specimen about 16 mm. across; width across the disc 3·3 mm.; diameter of

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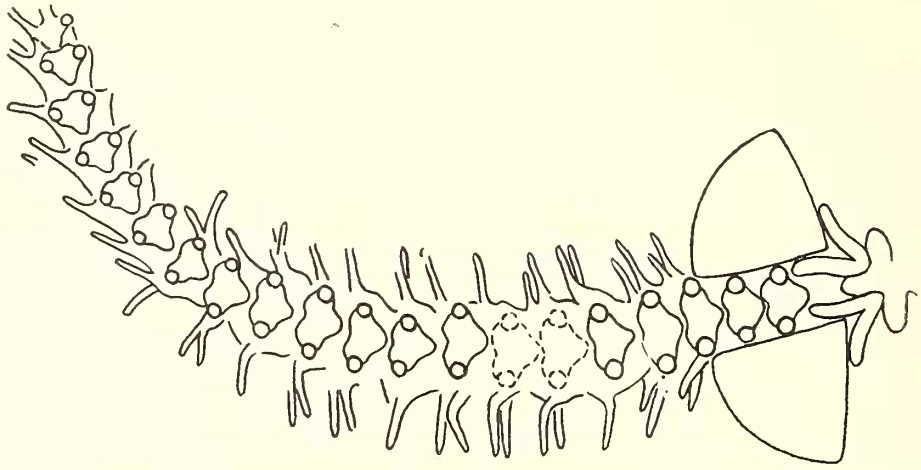
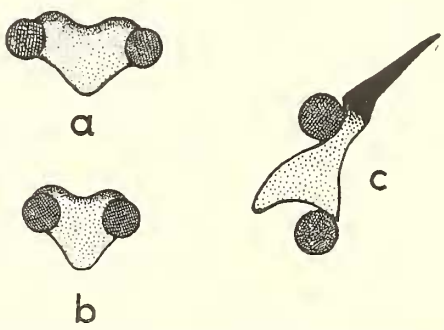
the mouth, 0·7 mm.; length of each arm, 6·5 mm.; breadth of each arm within the limits of the disc, 0·7 mm.; length of a spine, 0·45 mm.

Individual extremities of mouth rounded rather than pointed. Jaw structures not preserved. Adoral shield very small, consisting of a thin curved plate concave to the periphery of an arm. The ventral surface of the disc scaled.



TEXT-FIG. 1. *Nullamphiura felli* sp. nov. Detail of an arm, ×20 approx.



TEXT-FIG. 2*a-c*. *Nullamphiura felli* sp. nov. Holotype, CPC 4642, F22163. Locality T.T. 51, Bathurst Island, Northern Territory, Australia; Cenomanian; ×33. *a*, Proximal ventral arm plate with tentacle pores; *b*, distal ventral arm plate with spines and tentacle pores; *c*, proximal lateral arm plate with spine and tentacle pores.

Visible ventral surface of the ventral arm plates approaches a heart-shape, with the base of the heart pointing orally. The most proximal plates outside the disc are narrower (parallel to the length of the arm) than the distal plates; progressive distal elongation of ventral arm plates is accompanied by a slight inward migration of tentacle pores, which perforate both lateral margins of each ventral arm plate; plate surface pitted; highest relief of plate along aboral edge; plates touching or out of contact with each other.

Shape of the inner and outer surface of the lateral arm plate not known; lateral plate narrow in ventral view, with shape of a modified triangle with adoral and lateral margins

concave, aboral margin convex, and all three corners attenuated; each plate armed with two robust elongate tapering arm-spines, each about 0·45 mm. long. The lateral arm plates become relatively smaller in relation to the ventral arm plates nearer the arm-tip. The tentacle pores are large and have no tentacle scales.

Remarks. The preservation of *Nullamphiura felli* sp. nov. does not allow description of its internal structures or of its aboral aspect; even in the oral view not all structures are preserved. The nature of the jaws and teeth is not known so that some reservation is necessary on whether the new species is an amphiurid. On the other hand, features such as the scaled nature of the ventral portion of the disc, the distally increasing relative size of the ventral plates, and large tentacle pores without tentacle scales, all appear in the newly described genus *Nullamphiura* Fell 1962, and the similarities of the Bathurst Island specimen to this genus are so striking that little misgiving is felt about including it in the Amphiuridae.

Nullamphiura Fell includes eight species. It is a cosmopolitan genus and ranges from the littoral zone to 1,800 metres (see Fell 1962). No fossil representatives of the genus have been described. The distinctive specific character of the new species is the remarkably robust elongate tapering arm-spines.

The only Cretaceous ophiuroid which has been described from Australia is *Ophiacantha* (*Ophioglyphoida*) *fosteri* Chapman, from the Tambo(?) beds (Lower Cretaceous) at Cleeve, near Longreach, Queensland (Chapman 1934). The new species can be distinguished from it by its ventral arm plates, which distally become larger in relation to the lateral arm plates, and also an apparently smaller number of spines on each lateral arm plate. The shape of the ventral arm plate is quite distinctive in the Queensland form.

N. felli sp. nov. does not contribute to our knowledge of the age of the strata from which it was derived, nor does it extend the range of ophiuroids in general. It is, however, the first recorded fossil form of the genus *Nullamphiura*, and its value lies in increasing our knowledge of these rare fossils and their distribution.

The new species is named in honour of Professor H. Barraclough Fell, Zoology Department, Victoria University of Wellington, New Zealand.

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